

**REMARKS****I. Introduction**

Claims 8, 9, 11-13, and 19-25 are currently pending in the application. No claims have been amended, added, or canceled. Applicant respectfully submits herewith a declaration under 37 C.F.R. § 1.132 of Dr. Maurice Castro ("Castro Declaration"). Applicant respectfully requests reconsideration of the application in view of the Castro Declaration and the following remarks.

**II. Rejection under 35 U.S.C. § 103(a)**

Claims 8, 9, 11-13, and 19-24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Barthelemy ("Small Worlds Networks: Evidence for a Crossover Picture") in view of Collins ("It's a small world") further in view of Attanasio *et al.* (U.S. Pat. 5,371,852). Hereinafter, these references will be referenced as "Barthelemy," "Collins" and "Attanasio," respectively.

Barthelemy and Collins disclose that small world networks have interesting properties that, it has been suggested, may enable improvements in performance of telecommunications networks and computer networks such as the Internet. Attanasio teaches that processing nodes may be organized into clusters, and that the clusters may be configured so as to emulate a single, higher-powered, computing node. Attanasio discloses a method and apparatus for enabling a cluster of computers to appear as a single computer to host computers outside the cluster. That is, Attanasio teaches that a group of interconnected computing nodes may be configured so as to appear externally to be a single computing node. It is not an object of Attanasio to address issues of scalability. Rather, Attanasio is concerned with problems that arise when known clusters are reconfigured, for example to add or remove processing nodes (*See* Attanasio col. 3 line 42 to col. 4 line 39).

For at least the reasons set forth below, Applicant respectfully submits that the combination of Barthelemy, Collins, and Attanasio fails to render any pending claim obvious.

**A. Declaration under 37 C.F.R. § 1.132**

Applicant respectfully submits that the Castro Declaration provides persuasive evidence of at least the following points, each of which independently establishes the non-obviousness of claims 8, 9, 11-13, and 19-25. Withdrawal of the rejections under 35 U.S.C. § 103 of claims 8, 9, 11-13, and 19-25 is respectfully requested.

**1. One of ordinary skill in the art in June 1999 would have had no reasonable expectation of success in following practical applications suggested by Collins and Barthelemy.**

Applicant respectfully submits that there must be a showing of a suggestion or motivation to modify teachings of a reference in support of an obviousness rejection. *In re Kotzab*, 217 F.3d 1365 (Fed. Cir. 2000). The U.S. Supreme Court has held that rigid and mandatory application of the “teaching-suggestion-motivation,” or TSM, test is incompatible with its precedents. *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 [82 USPQ2d 1385] (2007). The Court did not, however, discard the TSM test completely; it noted that its precedents show that an invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Id.*

The Court held that the TSM test must be applied flexibly, and take into account a number of factors “in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1740-41. Despite this flexibility, however, the Court stated that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the way the claimed new invention does.” *Id.* “To facilitate review, this analysis should be made explicit.” *Id.* See *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). (emphasis added). *Id.*

The *KSR* Court noted that obviousness cannot be proven merely by showing that the elements of a claimed device were known in the prior art; it must be shown that those of ordinary skill in the art would have had some “apparent reason to combine the known elements in the fashion claimed.” *Id.* at 1741. However, the prior art can be modified or combined to reject

claims as *prima facie* obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant respectfully submits that, where there is no reasonable expectation of success for a purported modification, results achieved thereby may not be dismissed as "predictable," nor the modification as obvious.

The Office Action, the Castro Declaration, and Applicant appear to be in agreement that the prior art of record does not explicitly disclose the invention as defined by independent claims 8 and 19. However, it is asserted by the Office Action that it would have been obvious to apply mathematical principles disclosed by Barthelemy and Collins based on specific practical applications suggested by Barthelemy and Collins. Namely, the Office Action asserts that:

- (1) Barthelemy suggests applying small world principles to information networks in general; and
- (2) Collins suggests applying small-world principles to computer networks in particular.

The Castro Declaration explains in at least paragraphs 12-15 and 17-20 why the suggestions made by Collins and Barthelemy are devoid of necessary technical substance, unworkable, and moreover would be dismissed by one of ordinary skill in the art in June 1999. The Castro Declaration repeatedly notes and substantiates in the above-referenced paragraphs that one of ordinary skill in the art would not have had any reasonable expectation of success in following the practical applications suggested by Collins and Barthelemy. Therefore, the suggestions made by Collins and Barthelemy are ineffective as a basis for sustaining the obviousness rejection. Applicant respectfully submits that, contrary to assertions made in the Office Action, the combination asserted by the Examiner is not a combination that would have been obvious to one of ordinary skill in the art in June 1999.

**2. The suggestions by Collins and Barthelemy, if followed, do not result in the claimed invention.**

The Office Action heavily relies on an "explicit suggestion" in Collins that "providing a few random cross links between nodes along the backbone of the internet [*sic*]" could "reduce the time needed to transfer information via the Internet." *Office Action*, p. 6. However, as explained in at least paragraph 16 of the Castro Declaration, insertion of random links in a pre-

existing communications network would not result in the invention defined by independent claims 8 and 19. More particularly, the Castro Declaration explains that the random links would not result in the pre-existing communications network exhibiting small-world properties as required by a recitation of "...a small world network..." in independent claims 8 and 19. Applicant respectfully submits that Collins, Barthelemy, and Attanasio fail to render independent claims 8 and 19 and their dependents obvious.

**3. The claimed invention yields unexpected, unpredictable results that are directly attributable to the claimed invention.**

In paragraphs 22-23, the Castro Declaration explains various unexpected and unpredictable results due to the invention defined by independent claims 8 and 19. For example, the Castro Declaration states that, by constructing, in accordance with claim 8, a small-world network having an average path length between a plurality of computing nodes falling within a predetermined desired range independently of a number of the plurality of computing nodes, a scalable computer system in accordance with claim 19 was developed that spans over five orders of magnitude. While it is arguable that Barthelemy, Collins, and Attanasio may provide "pieces of the puzzle," they do not provide an implementation capable of achieving the wholly remarkable results of the present invention. Indeed, each reference is silent on the subject of *scalability*. Therefore, the combination of Barthelemy, Collins, and Attanasio fails to render independent claims 8 and 19 and their dependents obvious.

### **III. Conclusion**

In view of the above, Applicant respectfully submits that the present application is in condition for allowance. A Notice to that effect is respectfully requested.

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Respectfully submitted,

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